RCRA Compliance Inspection Report

Oregon State University
Corvallis, OR
ORD 05359 9908

June 25-26, 2013

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Report Date

Peer Review Signature

Date

Peer Review Signature

Date

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Disclaimer

This report is a summary of observations and information gathered from the facility at the time of the inspection. The information provided does not constitute a final decision on compliance with RCRA regulations, nor is it meant to be a comprehensive summary of all activities and processes conducted at the facility.

Section A: Basic Facility and Inspection Information

Facility Information

Handler Name:	Oregon State University
Handler ID Number:	ORD 05359 9908
Facility Contact/Title:	Dan Kermoyan, Assistant Director, Facilities Services
Facility Location Address:	212 Oak Creek Building Corvallis, OR 97331
Contact Phone Number:	541-737-2505
Contact Email Address:	dan.kermoyan@oregonstate.edu
GPS Coordinates of Site:	Lat: 44.5646° N Long: 123.2757° W

Inspection Information

Inspection Type:	Compliance Evaluation Inspection (CEI)
Inspection Date:	June 25-26, 2013
Arrival Time:	June 25, 2013 @ 8:40 AM
Departure Time:	June 26, 2013 @ 4:00 PM
Inspection Team:	Kevin Schanilec, RCRA Enforcement Engineer, EPA Region 10 Peter Magolske, RCRA Enforcement Officer, EPA Region 10 Ali Nikukar, Hazardous Waste Inspector, Oregon Department of Environmental Quality (DEQ)

Section B: General Facility Information

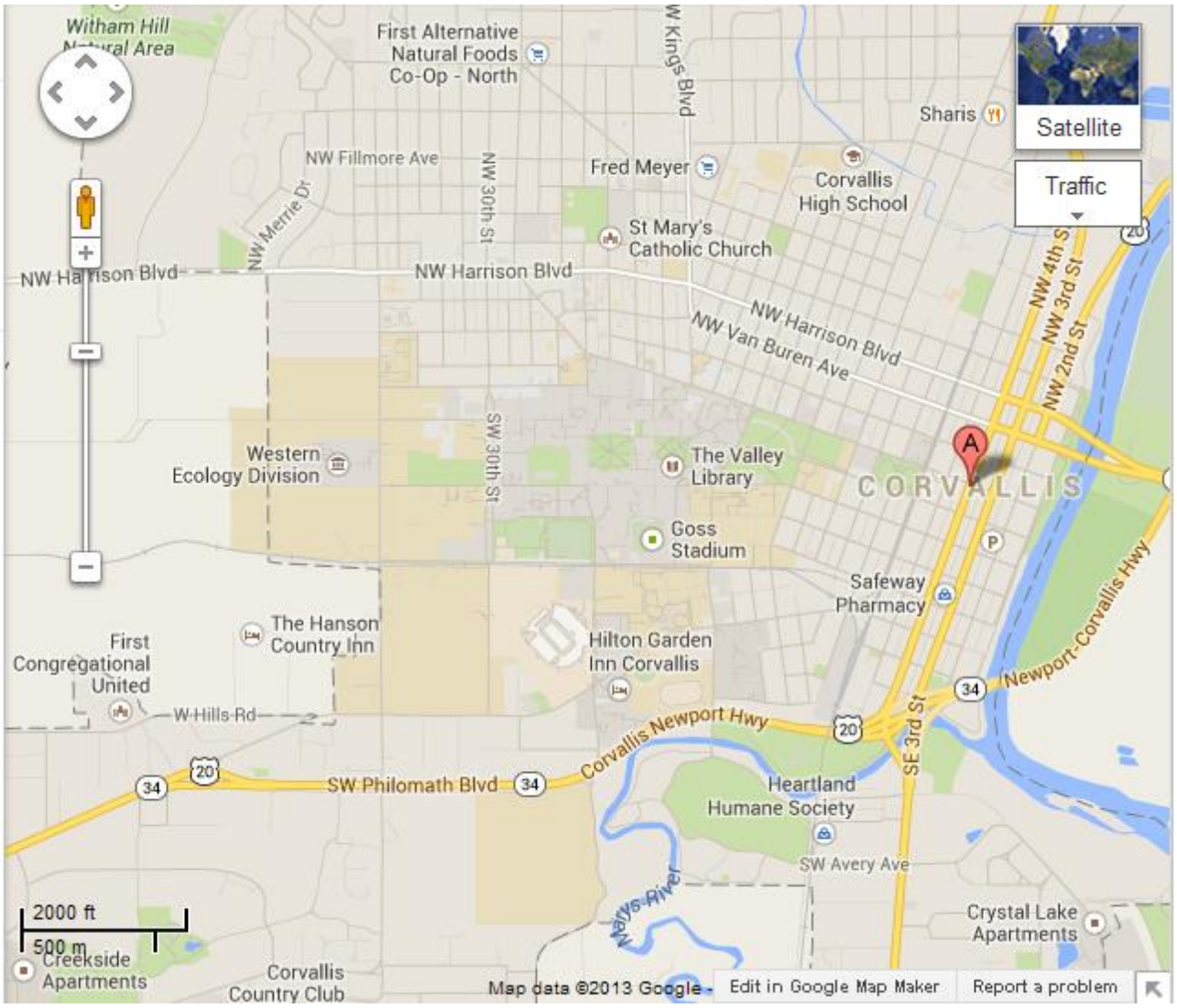
Owner/Operator Information

Oregon State University is a public research university, owned and operated by the State of Oregon. The pertinent organizational chart members include:

President: Dr. Edward J. Ray
VP for Finance and Administration: Glenn Ford
Facilities Services Director: Vincent Martorello
Chief Risk Officer: Patrick Hughes
Assistant EHS Director: Dan Kermoyan

Site Location

The facility is situated inside the city limits of Corvallis, OR In the map below, the campus occupies the areas shaded in brown. It is not on or near a Tribal reservation. The Willamette River is approximately one half mile to the east, and the smaller Mary's River is just a few blocks to the south. There are residences in the areas immediately adjacent to the campus, which itself covers approximately 400 acres. Within the campus are several dormitories, which houses approximately 4,300 residents.



According to a review of EJSCREEN, the facility does not appear to be an EJ area for concerns potentially addressable under this investigation, in that the highest EJSCREEN scores for surrounding neighborhoods are for lead-based paint (on the exterior of older homes), traffic density and proximity to surface water.

Background and Activities

The university was founded in 1868 and is one of the largest university campuses in the Region. The primary focus of the school is the sciences, therefore there are several facilities associated with chemistry, physics, biology, agriculture and other fields of study. Construction and maintenance are

ongoing at the campus, and a new residence hall was under construction at the time of the inspection. See http://djcoregon.com/news/2012/08/13/oregon-state-university-to-build-29m-residence-hall-2/.

Section C: Regulatory Information

Compliance History

The RCRAInfo Compliance Inspection Report contains general facility compliance information, including the generator status, regulatory/permit status, and inspection and enforcement history (Attachment A). The facility was most recently inspected by Oregon DEQ in October 2008. Numerous violations of RCRA were observed involving waste characterization and container management, and a Pre-Enforcement Notice letter was issued by ODEQ on December 3, 2008. A Consent Agreement between ODEQ and OSU was reached on May 6, 2009, and OSU paid a $18,600 penalty.

Regulatory Status

Based on its waste generation rate, the facility is a "large quantity generator" (LQG) in that it generates more than 1,000 kilograms of hazardous waste and/or more than 1 kilogram of acutely hazardous waste each month. This is the category listed in RCRAInfo, and Mr. Kermoyan verbally confirmed during the opening conference that the facility is a LQG.

The facility does not have a RCRA permit or interim status, and seeks to operate as a generator under the provision of 40 CFR 262.34(a). The NAICS code for this facility is 611310. The facility has no NPDES treatment or pre-treatment permit, but rather discharges to the City of Corvallis POTW system.

It is not known if the State of Oregon determined that the facility was a Significant Non-Complier (SNC) as a result of the 2008 inspection. At the time of writing this report, EPA has determined that the facility is a SNC, based on the preliminary findings from this inspection.

Site Hazardous Waste Information

As with other major universities, significant waste-related activities include maintenance, construction, and laboratory activities. Hazardous waste, used oil and universal waste are generated at various points throughout the campus.

Major waste streams include:

- Spent solvents, unused chemicals and other typical waste streams from the various chemistry, biology and other science laboratories
- Universal waste batteries and lamps from laboratory and residential facilities
- Used oil from equipment maintenance throughout the campus, such as from oil compressors, light engines, etc.
- Paint waste from maintenance and construction activities

Numerous satellite accumulation areas are operated throughout the campus (the exact number is not known), and a single 90-day hazardous waste accumulation building called the Annex is used to manage all waste being prepared for transport. Waste codes include virtually all "D" characteristic codes, as well as numerous listed codes from unused or outdated chemicals in laboratories.

Section D: Description of Inspection

Purpose of Inspection

This was a Resource Conservation and Recovery Act (RCRA) inspection conducted pursuant to Oregon's federally-authorized RCRA program. Oregon has adopted all federal hazardous waste regulations pursuant to OAR 340-100-002. The facility was inspected in accordance with 40 C.F.R. Parts 260 through 273 and 279 for compliance with federal hazardous waste, universal waste, and used oil management standards. The facility was also inspected for compliance with Oregon state-only hazardous waste regulations (OAR Chapter 340, Divisions 100-120).

Site Access

While the campus is open and freely accessible, inspectors must check in at the Oak Creek Building, where the Environmental, Health and Safety organization is housed.

Inspection Entry and Opening Conference

Peter Magolske, Ali Nikukar and I arrived at the Oak Creek Building at approximately 0840 on June 25, 2013. The temperature was approximately 60 degrees Fahrenheit with periods of rain. We met with Dan Kermoyan, the Assistant Director of Environmental Health and Safety (EHS). I alone presented my inspection credentials to Mr. Kermoyan and stated that we were there to conduct a RCRA compliance inspection. We were also joined by Lance Jones, Chemical Safety Officer.

Mr. Kermoyan explained that Pete Schoonover, Health and Safety Technologist, who manages OSU's waste accumulation annex ("Annex"), was out of town, but that he and Mr. Jones would escort us through the campus in order to do the inspection.

Mr. Kermoyan explained that EHS runs the waste management area which services most waste generators on the campus. He confirmed that they are a "large quantity generator" in that they generate more than 1000 kilograms of hazardous waste per month. RCRA waste generation at OSU arises primarily from laboratory, research and maintenance work. Mr. Kermoyan was not aware of any hazardous waste recycling, such as distillation of spent paint thinner, taking place on the campus, stating that the veterinary medicine group recycled xylene wastes in the 1990's. Only light vehicle maintenance is done on-site, while heavier repairs are done at commercial repair facilities out in the Corvallis area.

When a campus entity has waste to be picked up, they fill out an on-line form which is routed to Mr. Schoonover, who then arranges to come by and pick up the waste. The wastes are typically aggregated in a cardboard box, plastic tub, rolling cart or other conveyance. Mr. Schoonover then transports the wastes to the Annex in order to process them for eventual shipment or, in some cases, possible use or re-use elsewhere on the campus.

Mr. Kermoyan stated that EHS has no formal written policies or procedures regarding how chemicals are evaluated for use or re-use elsewhere on the campus, and stated that individual departments such as the Chemistry Department have informal means of getting the word out within their department that certain chemicals are available in a certain lab or room for others to take and use.

Mr. Kermoyan explained that Veolia Services is the contractor for waste disposal for the Oregon University System. Veolia comes to the OSU campus approximately five times per year and does waste characterization, packaging, manifest and LDR paperwork, etc. and also arranges for receiving facilities to which the various wastes are shipped.

Inspection Summary

The inspection started at the EHS Annex Building, where the "90-day" waste accumulation area and other waste management facilities including universal waste, biological waste refrigeration, and radioactive waste storage facilities. There are three main "bays" separated by concrete blocks walls, with overhead and standard doors used for access, as well as a more open universal waste accumulation area.

Annex - Bay 1: Bulk Liquids

On the left as we walked into Bay 1 was a series of shelving units holding various materials. I observed approximately 24 containers labeled as containing ethyl ether, most containers having a capacity of approximately one quart (pictures 0029 – 0036). Most of the containers were rusted and had manufacturer labeling that indicated that the material was potentially quite old. I did not touch the containers to gauge the liquid levels in them, as some ethers can become shock sensitive over time.

None of the containers were labeled or marked with the words "Hazardous Waste," nor did any of them have an accumulation start date (40 CFR 262.34(a)(2) and (3)). Since Mr. Schoonover had not been to work for at least four days, the material had been in Bay 1 in excess of three days (40 CFR 262.34(c)(2)). Per the list in OSU's submission B1 "B1-ListOfEthers.pdf" inventory (Attachment D), most of the containers were full or otherwise had ether in them. Some were as old as December 1985. Following the inspection, all of these containers were shipped off as D001 hazardous waste on July 19, 2013.

0029:

0030:

0031:

0032:

0034:

0035:

0046:

0036:

Ethyl ether containers in Bay 1

Additional chemicals were in the shelves on the left-hand side of Bay 1:

0037 - A container of ECP 99 Oil Eater. An internet search indicates the company is longer in business. The label states that the material has a one year shelf life. It is not known if the dark oily color is how the material looked when new or if oil has been poured into it.

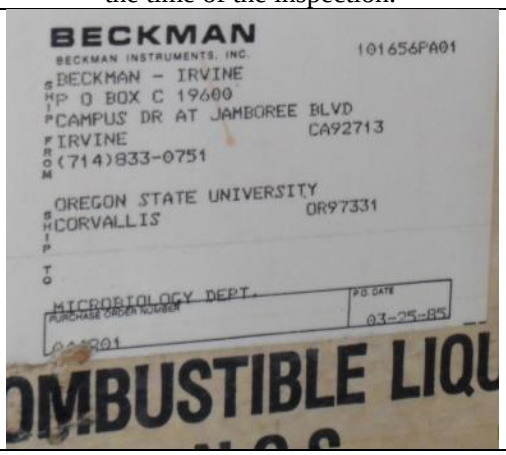
0038 - A jar of Tioxide Anatase. Per the manufacturer's web site, it appears that this is at least 92.5% titanium dioxide and is not expected to exhibit hazardous characteristics.

0039 - A sealed box of JT Baker anhydrous ether, labeled "use before 10/2004." It is 99.9% ethyl ether, which has a flash point of -45°C. If waste, this would be a D001 ignitable hazardous waste.

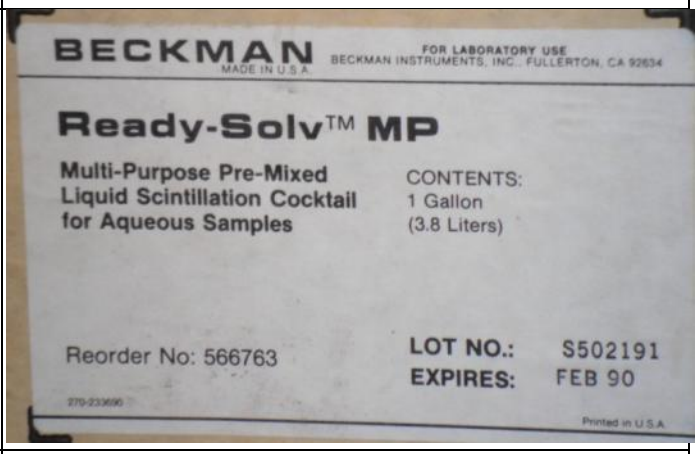
0040 - A sealed box of "Electricorr Cleaner" aerosols. Per the manufacturer's web site, is has a flash point of 143.5°F. A D001 hazardous waste has a flash point of less than 140°F (60°C).

0042 - Two approximately one-gallon containers of "Eluent 2 for HPLC." Actual contents were not known at the time of the inspection.

0043 - Sealed box of Beckman "Ready-Solv MP."



0045 - The Beckman Ready-Solv MP was purchased in March 1985 by OSU, and is labeled "combustible liquid."

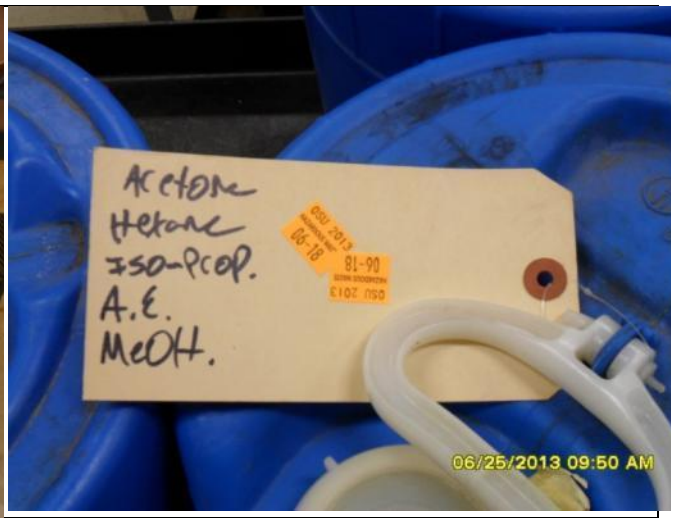


0044 - The Beckman Ready-Solv MP had an expiration date of February 1990. Per the MSDS, it has a flash point of 43°C (109.4°F), therefore it would be a D001 hazardous waste if it is a solid waste.

0047 - General view of second portion of shelves on left-hand side of Bay 1.

Central area of Bay 1:

0048 - Eleven 5-gallon full blue plastic containers, all with the accumulation start date of 6/18/2013, six days prior to the inspection.



0049 - The 11 containers were labeled with the words "Hazardous waste" on the small orange labels.

0050 - Twelve approximately one-gallon containers labeled "Mother Liquor." Per submission B2a (Attachment D), the contents of the containers, or even the laboratory or person(s) who generated the wastes, was unknown to OSU EHS.

0051 - Twelve approximately one-gallon containers labeled "Mother Liquor." Many of these were later determined to be D002 hazardous waste (submissions B2a and B2b in Attachment D).

0054 - Containers in the central area of Bay 1

Along the right-hand wall of Bay 1:

0055 - 55-gallon cardboard drum containing waste aerosols. The retaining ring was not secured. It was marked with an accumulation start date of 4-02-13 and labeled as HW.

0056 - The aerosol drum was approximately half full of waste aerosols.

0057 - Next to the aerosol drum, there was a black 55-gallon drum apparently used to bulk flammable liquids. There was a container of acetone draining on an open funnel, and a container of liquid paint remover was waiting to be drained.

0059 - On the floor in front of the aerosol cardboard drum was a black trash bag with what felt like waste aerosols. It was marked as aqueous hazardous waste with an accumulation start date of 15-May-13.

0060 - Close-up of HW label on aerosol trash bag.

0061 - Two containers of presumed used oil, not labeled with “Used Oil”

0062 - In the plastic tote at base of the black bulk drum, there was a bag with what appeared to be a used absorbent material. Actual contents and chemical identity are unknown. There was standing liquid in the bag.

0063 - Seven 55-gallon drums of debris. According to Mr. Kermoyan, this was from pressure washing the exterior of brick buildings. Mr. Kermoyan did not know which building cleaning produced this waste.

0064 - Inside the debris drums, visually indicating brick-colored debris

0065 - Lid detail of pressure washing debris. Mr. Kermoyan did not know if this waste was a hazardous waste.

Inside a small room inside Bay 1 with a large fume hood:

0066 - Two 5-gallon metal containers marked “methanol imidacloprid”. The blue plastic containers, also shown, appeared to be properly labeled and dated.

0067 – Two 5-gallon containers marked as methanol imidacloprid, both of which felt full and were marked as “full” (see red tape). They were marked with a HW label, but neither had an accumulation start date.

Annex - Bay 2:

In the middle bay of the Annex, Bay 2 or the "lab pack" bay, on tables as we walked in:

0068 - Immediately as we walked in were tables with containers on them. There were about 10 brown glass quart containers and many smaller containers, with no labels or dates. Mr. Kermoyan did not know what the contents were.

0069 - There was also a clear quart container with an unknown liquid, also without a label or date.

Along the walls of Bay 2 were several containers and storage lockers:

0073 - Organic debris hazardous waste drum with ring unsecured.

0074 - Organic debris hazardous waste drum with ring unsecured.

0076 - In a yellow locker along the near wall were containers of pentachlorophenol and 2,4,5-T (2,4,5-trichlorophenoxyacetic acid). There were no HW labels or accumulation start dates on these containers. Unused wastes of both of these materials carry the F027 waste code.

0077 - The pentachlorophenol bottle appeared to be approximately half full.

0078 - The 2,4,5-T bottle was over ¾ full.

0079 - In the lower shelves were containers labeled as TCDD Dioxin (tetrachlorodibenzo-p-dioxin), which we did not open. The small yellow label on the white container, just above the "TCDD," was dated "2-24-03." Because the container was not opened, and Mr. Kermoyan did not know the contents, it was not known at the time of the inspection if the material met the criteria for F-listed wastes.

0080 - There was also a container labeled as containing TCDF, which we did not open. Because the container was not opened, and Mr. Kermoyan did not know the contents, it was not known at the time of the inspection if the material met the criteria for F-listed wastes.

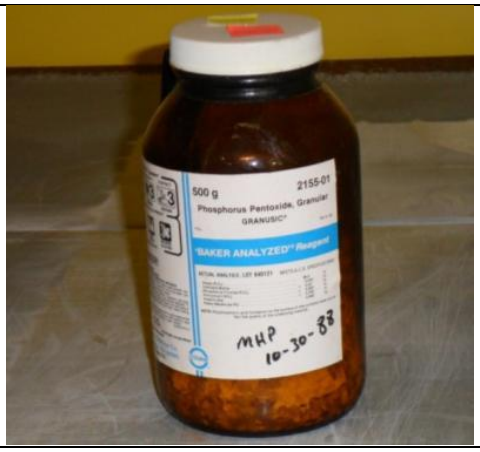
0081 - View of door on yellow locker that contained pentachlorophenol, 2,4,5-T, TCDD and TCDF(tetrachlorodibenzofuran).

0083 - In the locker on the right, labeled “Batteries - Universal Waste - Alk, NiCd, LiMH” were containers labeled as containing lead and mercury batteries.

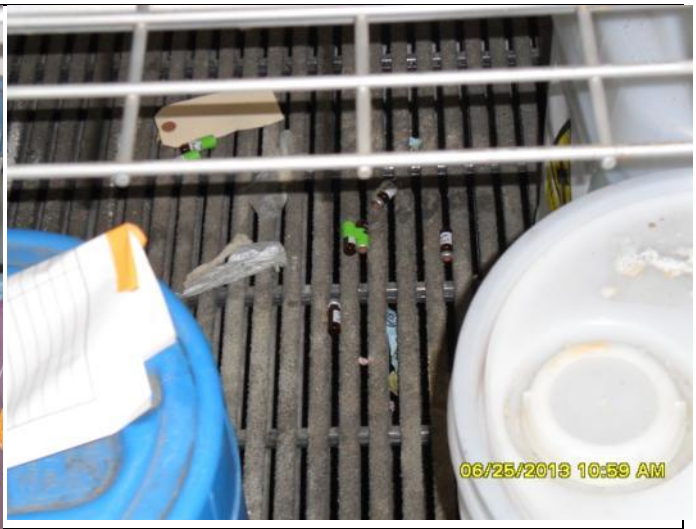
0082 - There were hundreds of small watch-sized batteries in the two similar-sized containers on the right. There were no hazardous waste or universal waste labels, nor were the containers dated.

0085 - In the “Oxider OX-1” locker was a tray with several small containers. Not all were labeled or marked with accumulation start dates.

0084 - In the “Oxider OX-1” locker was a tray with several small containers. Not all, but some, were labeled as HW or marked with accumulation start dates. No information was obtained as to whether or not the unlabeled container contained hazardous waste.

	
0087 - In the "Water Reactive – Dangerous When Wet 4.3" locker was a single container of phosphorous pentoxide.	0086 - Close–up of the phosphorus pentoxide container in picture 0087. The faded yellow hazardous waste label on the lid was dated "9/14/12." The label on the side of the container itself was dated 10/30/88: this may have been the date on which the material was purchased or first opened.
	
0088 - Closed locker which contained the container of phosphorous pentoxide.	0090 - In the "Flammable Solid 4.1" locker were several bottles of ethyl ether. None of the containers were labeled with the words "Hazardous Waste" or accumulation start dates.
	
0089 - In the "Flammable Solid 4.1" locker were several bottles of ethyl ether. None of the containers were labeled with the words "Hazardous Waste" or accumulation start dates. Given the condition of the containers, the contents or degree of fullness was not ascertained during the inspection.	0091 - In the "Toxic Poison 6.1" locker/closet, there was a 5-gallon container, labeled as containing "Ultra Klene" (a detergent), which had a HW label and an accumulation date of 3/15/2013.

0093 - Inside of the "Toxic Poison 6.1" locker/closet, many small vials were observed on the shelves and floor. Of the containers in the light blue tub which had accumulation start dates were dated between 3/15/2013 and 3/20/2013.



0094 - Inside of the "Toxic Poison 6.1" locker/closet, many small, unlabelled vials were strewn on the shelves and floor. There were marking apparently from laboratory use, but no hazardous waste marking or accumulation start dates were observed.

0095 - Inside the "Toxic Poison 6.1" locker/closet, there was an approximately one-quart container labeled as hazardous waste with an accumulation start date of 3/18/2013.

0096 - The outside of the "Toxic Poison 6.1" locker/closet.

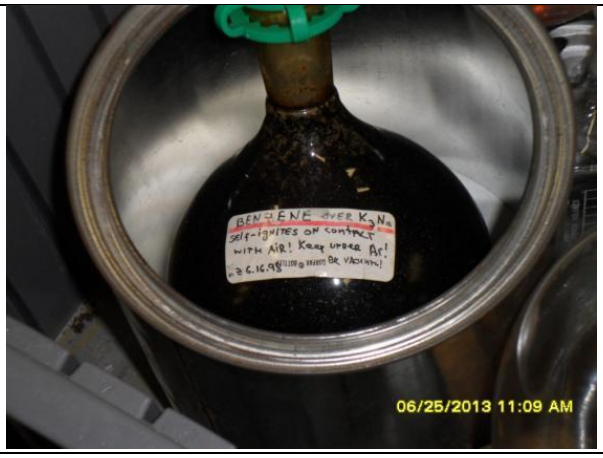
	
0098 – The exterior of the "Toxic 6, Inhalation Hazard" closet/locker.	0097 - Inside the "Toxic 6, Inhalation Hazard" closet/locker, smaller Poison and Explosive lockers were observed: the lockers were not opened during the inspection due to uncertainties around safety, therefore the contents were unknown.

Along the back wall of Bay 2 in shelving units:

	
0099 - A tray of containers with no HW labels or accumulation start dates. Contents included a sealed quart of phenoxy ethanol, with a flash point of 113°C.	0100 - Tub with what appeared to be waste aerosol adhesive, potassium tetraborate, other rusted/old containers. None of the containers had hazardous waste labels or accumulation start dates.

0106 - At the end of the first row of shelves was a rolling cart.

0107 - On the cart was a container labeled as containing "ether with H_2SO_4." There was no hazardous waste label or date.



0105 - A flask labeled as "Benzene over K_3Na self-ignites on contact with air! Keep under Ar! Or vacuum!" It is also labeled with the date 6/16/98.

0104 - The flask from picture 0105 in and amongst other chemicals, identities unknown.

0108 - Box of various unknown liquid chemicals next to the container of ether with H_2SO_4

0109 - Cylinder labeled as isobutane next the cart containing the K_3Na under benzene.

Per submissions B3a and B3b (Attachment D), the sodium-potassium was believed to be an alloy, and was shipped off as a D001, D003 and D018 hazardous waste. The large red jug in picture 0104 held D001 pump oil, and there was approximately 300 ml of sulfuric acid in the silver container in picture 0107.

Rear portion of the middle bay (Bay 2), first shelving unit from the back:

0110 - A box of chemicals, two labeled ferrous ammonium sulfate, one labeled alum. Not all labels were visible.

0112 - Another box of various chemicals, including ammonium iodide.

0113 - Box of what appeared to be ammunition reloading materials. One box was labeled as containing 12-gauge ammunition and one was labeled as containing "smokeless powder extremely flammable."

0114 - Container labeled as containing KOH potassium hydroxide, approximately ¼ full by feel. The inspection team did not open this container.

In the second shelving unit from the back in Bay 2:

0115 - Charcoal starter and wood preservative, with no HW labels or accumulation start dates.

0116 - Box of unknown, old chemicals: no HW labels or accumulation start dates were observed. Many containers were not closed.

0117 - Another box of old chemicals

0118 - Another tub of old chemicals

0119 - On the near side of the shelving unit, a black 5-gallon bucket with a container labeled "CH_2Cl_2/P_2O_5" (dichloromethane and phosphorous pentoxide). No HW label or accumulation start date was visible on the bucket or the container.

0120 - Cylinder of poison carbonyl sulfide gas, next to containers of methyl-lithium/ether solution and phenyl-lithium/ether solution (both of which catch fire if exposed to air). No HW labels or accumulation start dates were observed on any of these containers.

0121 – Label on cylinder of poison carbonyl sulfide gas, seen in picture 0120, next to containers of methyl-lithium/ether solution and phenyl-lithium/ether solution shown in picture 0122 (both may catch fire if exposed to air).

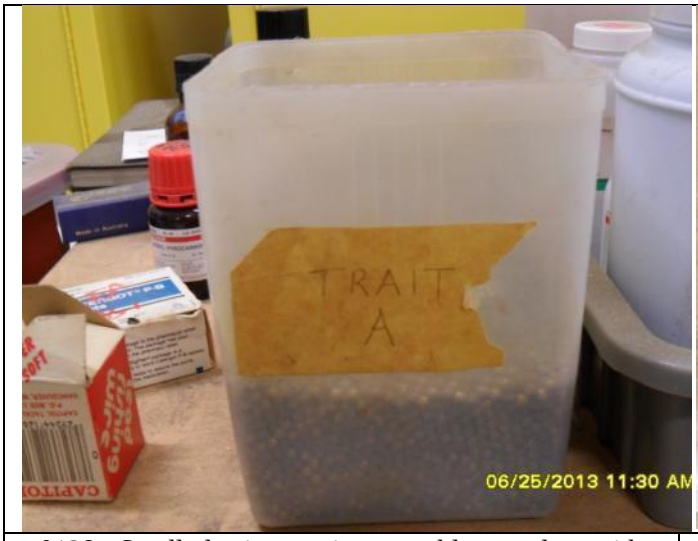
0122 - Containers of methyl-lithium/ether solution and phenyl-lithium/ether solution (both of which catch fire if exposed to air). No labels or accumulation start dates were visible.

0123 - Various chemicals, including two containers of sodium cyanide, all dated between 3/14/3013 and 3/19/2013 according to the small yellow hazardous waste labels.

0124 - Refrigerator on right-hand counter, marked "explosive" held containers of benzoyl peroxide (reagent grade), cyanamide, and azobisisobutyrnitrile. No HW labels or accumulation start dates were visible.

0125 – Exterior view of explosive refrigerator referenced in picture 0124.

0126 - On table near door, there was a gray tray with containers of Tioxide Rutile (titanium dioxide) and other unknown materials.



0128 - Small plastic container on table near door with pellets, labeled "Trait A"

0127 - Small plastic container on table near door with pellets, labeled "Trait A"

I requested additional information about the contents of many of the materials depicted in the pictures above in my June 28, 2013 email (Attachment C). Per submission B10 (Attachment D), the contents of the various tubs and boxes for which I requested more information was inventoried, and while a few of the containers contained hazardous waste, many of the containers were not believed by OSU to be hazardous waste.

In Bay 3, the radioactive waste bay:

0135 - The "Flammable Mixed Waste" locker

0130 - Inside the "Flammable Mixed Waste" locker. Large container on upper left was labeled as uranyl nitrate and water, two containers on lower left were labeled as "probably chloroform, phenol, H_2O." Chloroform is a D022 waste. The photograph is blurred, and it is not clear from inspection notes whether the containers were marked as being hazardous waste, although the containers were in a mixed hazardous/radioactive waste locker.

0132 - From the "Flammable Mixed Waste" locker, vials dated "12/10/01." Two labels stated "Ra-226." The containers were not labeled as hazardous waste.

0131 - From the "Flammable Mixed Waste" locker, vials dated 2007 and 2008. No hazardous waste labels were observed, although the bag was not moved due to safety concerns.

0134 - "Toxic Mixed Waste" locker

0133 - Inside of the "Toxic Mixed Waste" locker. We did not get close enough to read chemical names, but did not observe any HW labels or accumulation start dates.

In the main area of the Annex, there was a universal waste area:

0136 - Drum of broken lamps labeled as universal waste, with an accumulation start date of 1/11/13. The ring was not secured on the drum.

0137 - Drum of broken lamps labeled as universal waste, with an accumulation start date of 1/11/13. The ring was not secured on the drum.

0138 - Oblong rectangular box with a universal waste lamp inside; container was not closed. Not clear from notes if the container was labeled or dated properly.

0139 - Box with lamps on floor that was not closed. No universal waste label or accumulation start date was observed.

0140 - U-shaped lamp box that was not closed. The box was labeled and dated.

0141 - Large vapor lamp box that was not closed. The box was labeled and dated.

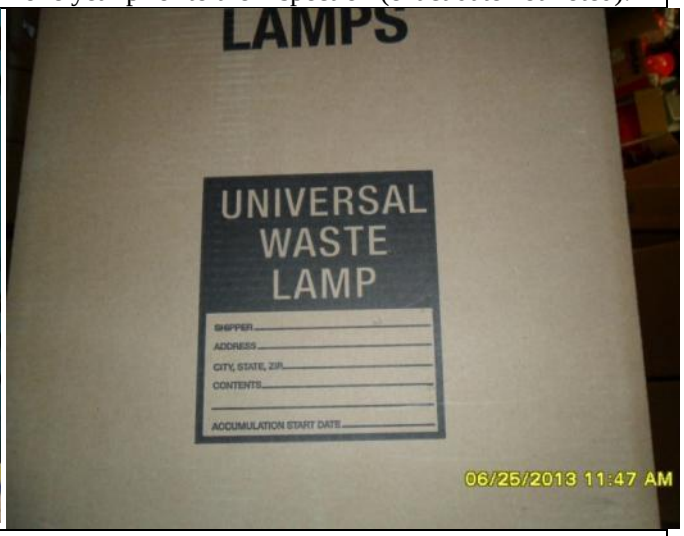
0142 - Waste battery area with many containers of waste batteries. One battery was observed on the floor with no secondary containment.

0143 - Box of waste batteries, with no universal waste label or accumulation start date observed. According to Mr. Kermoyan, all such batteries are managed as universal waste.

0144 - Container of batteries, with no universal waste label or accumulation start date observed.

0147 - UW battery container. Container was labeled as universal waste with an accumulation start date less than one year prior to the inspection (exact date not noted).

0145 - Open UW lamps box, labeled as universal waste but not marked with an accumulation start date



0146 - Open UW lamps box, labeled but not dated (same container as picture 0145)

0151 - Open UW battery containers. All were labeled as universal wastes and dated within one year of the inspection date.

0152 - Open UW battery containers

0149 - Open UW battery containers

0150 - Open UW battery container

0153 - Open UW lamp box with no accumulation start date. The box contained at least sixty 4-foot lamps. No universal waste labels or dates were observed.

The inspection team broke for lunch and returned at 1:00 pm on Tuesday, June 25th. I talked with Messrs. Kermoyan and Jones. They stated that Veolia had been there on 6/10/2013 but was not able to finish processing all of the waste, and would return on 7/15/2013. They explained that waste pick-ups from labs and other locations is done via an on-line pick-up request. EHS prefers to take unknowns to the 90-day area rather than leave them in the lab. They stated that Veolia only does typical field haz-cat tests (flash point, pH, etc.), and that no TCLP or other metals testing is done to determine what the waste contained. In many cases, Veolia just calls it a hazardous waste since they do not actually know what is in the container. I asked them how they could fill out an LDR form if they did not know if the waste contained any of the metals or other LDR constituents: no response was given. Universal waste battery buckets are throughout the campus, and when full someone contacts EHS and requests a pick-up. The batteries must be sorted at the Annex.

Each professor is largely independent regarding waste management, and some departments train their workers better than others. Chemistry students typically get a one-time training on hazardous waste requirements.

Motor Pool/Vehicle Maintenance, Justin Fleming, Manager:
OSU services approximately 300 vehicles with two mechanics at this building. They typically do lube/oil/filter maintenance; no tires or transmission work. Mr. Fleming stated that all batteries are delivered and picked up daily by NAPA. They no longer do body work. Used oil is picked up by Thermo Fluids out of Portland, OR.

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<td>0154 - One of two oil caddies I observed that were not labeled with the words “used oil.” I stated to Mr. Fleming that even these needed to be so labeled.</td>
<td>0155 - Two of two oil caddies I observed that were not labeled with the words “used oil.” I stated to Mr. Fleming that even these needed to be so labeled.</td>
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0156 - Container of batteries in motor pool, labeled as "dead batteries," but not as universal waste. It was not dated.	0157 - Container of UW batteries in motor pool, labeled as "dead batteries," but not as universal waste. It was not dated.

Shops areas:

	
0158 - In the road striping shop, spent aerosol cans with no HW label on the container were in an open box. I observed Mr. Mark Wirth, a worker at the shop, place them in a properly labeled white plastic satellite accumulation drum outside the door of the shop.	0159 - In the road striping shop, spent aerosol cans with no HW label on the container were in an open box. I observed Mr. Mark Wirth place them in the provided white plastic drum outside the door of the shop.

0160 - In the mechanics shop (PM Shop #151), where light engine maintenance is performed, there was a used oil drum (middle drum, with yellow funnel) not labeled as containing "Used Oil."

0161 - In the electrical shop, there was a rack of three boxes of used fluorescent bulbs. The boxes in the racks has pre-printed "universal waste" labels. None of the containers were closed. Only one of the boxes was labeled with an accumulation start date of "1/31/12," which was greater than one year before the date of the inspection.

0162 - Open containers of UW lamps and batteries on the floor in front of the bulb rack. No accumulation start dates or universal waste labels were observed.

0163 - Open box of "HID" bulbs in the electrical shop. No universal waste label or accumulation date was noted.

0164 - Open container of CFL lamps in the electrical shop, labeled with an accumulation start date of 1/31/12 (first picture).

0165 - Open container of CFL UW lamps in the electrical shop, labeled with an accumulation start date of 1/31/12 (second picture).

	
0166 - UW label on open container of CFL lamps in the electrical shop. The accumulation start date is labeled as 1/31/12 (third picture).	0168 - In the General Shop area, there was a citrus-based parts washer with Tekusolv label.

Gilbert Hall (Chemistry Building) Room 328, Professor Jim White:

	
0169 - Gilbert 328: Open satellite container in fume hood, labeled as "Hazardous Waste Non-halogenated solvents". Per Subrada Shaw, a graduate student in the lab, it is part of undergraduate student Jared Hazern's project under Professor James White. I stated to Mr. Shaw that the container needs to be closed when not putting waste into it.	0170 - Gilbert 328: box of unknown chemicals sitting outside of the store room. (first picture)

0171 - Gilbert 328: box of unknown chemicals sitting outside of the store room (second picture).

0172 - Chemical store room in Gilbert 328.

0173 - Chemical store room in Gilbert 328

0174 - Chemical store room in Gilbert 328

0175 - Final shot of the chemical store room in Gilbert Hall 328.

For pictures 0172 through 0175, per Professor White, whose program was about to be moved out of the building, 95% of the chemicals in the room will be disposed of. Professor White believed he had some sort of inventory somewhere, but stated it was not up to date. He stated that some chemicals expire in place due to oxidation or other causes. Professor White initially mistook me for an employee of OSU's EHS and stated that he needed to get with me the following week to discuss how to manage all of the chemicals he would not be moving to the new building.

I requested a detailed inventory of Gilbert 328 in my June 28, 2013 email to OSU. Per submission B5 (Attachment D), most of the material in the Gilbert Hall 328 store room was a waste shipped out as a hazardous waste.

Gilbert Hall 320, Professor Jim White:

0180 - Gilbert 320: refrigerated storage room

Pictures 180-190 show a refrigerated storage under Professor White. According to Professor White, the small sample vials on the left have been picked through and are all wastes.

I requested a detailed inventory of Gilbert 320 in my June 28, 2013 email to OSU. Per submission B4 (Attachment D), there was approximately 280 pounds or organic synthesis wastes in vials, some of which were moved out prior to inventorying the room. This submission shows that most of the wastes in the room were hazardous wastes.

0182 – Gilbert 320: trays on the right are various chemicals, with signs indicating that certain individuals cleaned their refrigerators out, so these may be product or waste. Professor White did not specify either way.

0181 - Gilbert 320 chemicals

0183 - Gilbert 320 chemicals

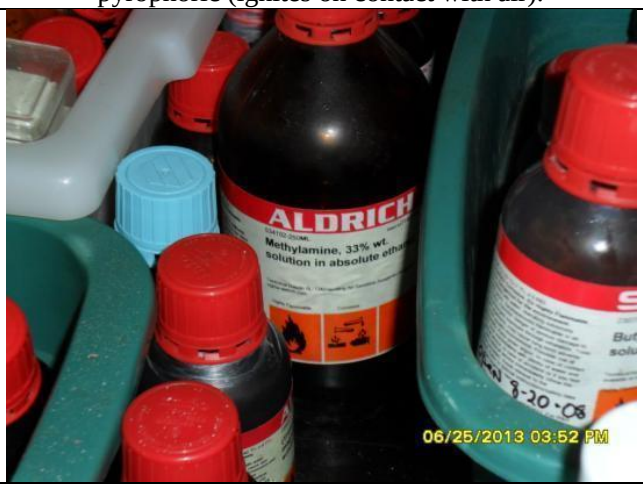
0184 - Gilbert 320 chemicals

0185 - Gilbert 320 chemicals: "acrolein" - heat and light sensitive, highly flammable, corrosive.

0186 - Gilbert 320 chemicals: flammable 2-methyl-2-butene fuel.

0187 - Gilbert 320 chemicals: butyl-lithium - flammable, pyrophoric (ignites on contact with air).

0188 - Gilbert 320 chemicals: peroxides.



0189 - Gilbert 320 chemicals: methylamine in ether.

0190 - Gilbert 320 chemicals: cyclohexene.

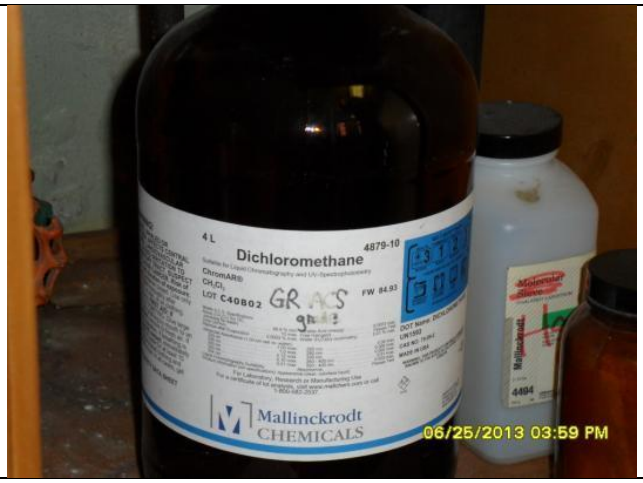
Gilbert Hall 353, Professor Paul Blakemore: Per document "B6-Gilbert353Chems.pdf" (Attachment D), the room contained a mixture of materials which were subsequently re-used within the campus or were determined to be wastes, both hazardous and non-hazardous. A full inventory is given in this document, and approximately 31 containers of hazardous waste were in this room at the time of the inspection.

0199 - Gilbert 353: This lab was formerly used by Professor Paul Blakemore. Per the sign on the door, he did not want anything moved to the new Chemistry Building.

0191 - Gilbert 353: Inside in the cabinets were various chemicals, including 2M hydrochloric acid.

0192 - Gilbert 353: Sulfuric, perchloric, glacial acetic acids.

0193 - Gilbert 353: Sulfuric, perchloric, glacial acetic acids.



0194 - Gilbert 353: Under hood just to the right of the door as you walk in was a quarter-full gallon of dichloromethane.

0195 - Gilbert 353: In the flammable locker under the desk were full quarts of ethyl ether, 1.5 gallons of ethyl acetate, a full gallon of acetone, and a half gallon of hexanes. This picture shows the labels on some of these containers.

0196 - Gilbert 353: In the flammable locker under the desk were full quarts of ethyl ether, 1.5 gallons of ethyl acetate, a full gallon of acetone, and a half gallon of hexanes. This picture shows the labels on some of these containers.

0197 - Gilbert 353: In the flammable locker under the desk were full quarts of ethyl ether, 1.5 gallons of ethyl acetate, a full gallon of acetone, and a half gallon of hexanes, among other containers that were in the back so we could not read the labels.

0198 - Gilbert 353: Closed flammables locker under desk.

Gilbert Hall 254, Professor James Ingle:
Professor Ingle is retired, but according to Mr. Kermoyan still does some research at the university. It was not known to Messrs. Kermoyan or Jones how long it had been since this room had been used. An extensive number of chemical containers, apparently all inorganic, was in this room. I looked inside the flammable locker and noticed a nearly-full gallon of 85% phosphoric acid.

Per submission B7 (Attachment D), Professor Ingle indicated that work had been done in the lab the week prior to the inspection. According to this inventory, done subsequently to the inspection, almost all of the material was shipped as a waste, much of it as a hazardous waste.

0200 - Gilbert 254: Smaller shelving area.

0201 - Gilbert 254: Smaller shelving area, close-up of reactive ammonium nitrate.

Gilbert Hall 11, Professor Doug Kessler:
This set of rooms was being gutted for renovations. Inside the fume hood was a clear gallon bottle with nitric acid and a brown cloud in the head space. Mr. Jones stated that something that looked like that would not be able to be reused elsewhere in the university.

0202 - Nitric acid with brown cloud. It was not labeled as HW or marked with an accumulation start date.

We concluded the first day of the inspection at approximately 5:00 PM.

Second Day of Inspection: June 26, 2013

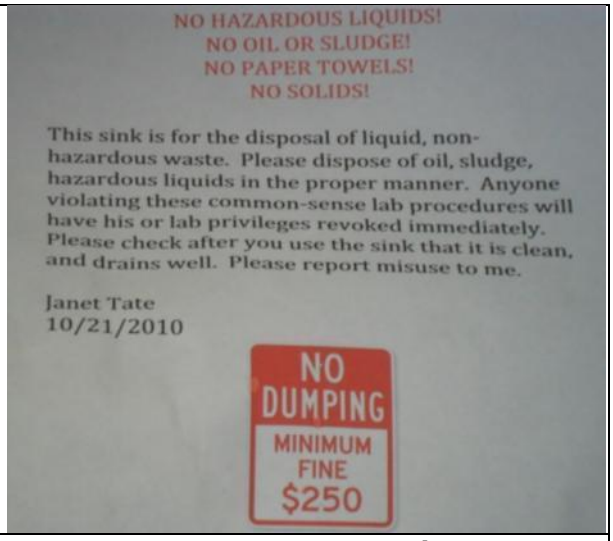
June 26, 2013, starting at approximately 0840, with Mr. Kermoyan and Mr. Jones. We went to Weniger Hall, which houses oceanography, animal sciences, physics, environmental and molecular toxicology, biology and pharmacy.

We started on the sixth floor of the building, In the utility spaces (pumps, ventilation equipment, etc.), I encountered and talked to Mr. Stephen Mitchell, who was working on a pump/motor unit. I asked him if he ever generated any used oil and what he did with it. He stated that he puts it in a container and it is either brought back to the shop or sent to EHS. I asked him if he labels the container with "Used Oil," and he said no.

In the phytoplankton lab, Room 520, I observed an approximately 25-liter clear plastic tub in which many small containers were soaking. Baeksoo Lee, a graduate student in the lab under Professor Katie Watkins-Brandt, stated that it was a 10% solution of hydrochloric acid (1.8 liters of acid and 18 liters of water). Acid is periodically added to maintain strength, and eventually the whole solution is poured down the drain when spent. OSU does not have a NPDES pretreatment permit.

In Room 534, I observed a gallon jug nearly full, labeled as "Colex." Mr. Kermoyan did not know if it was a product or waste, or whether it was hazardous.

0203 - Weniger 534: On right, a nearly full gallon jug labeled as "Colex"



0206 - Sign in Weniger 487 regarding pouring hazardous waste down the drain.

In Weniger 487, under Professor Janet Tate, there is a sign stating that no hazardous waste is to be poured down the drain. In talking with Ms. Tate, she stated that small volume (2-3 squirts) of hazardous waste from cleaning, such as methanol and acetone, are in fact poured down the drain, while larger volumes are collected in satellite containers. She estimated that they use perhaps one gallon per year of each acetone and methanol.

In Weniger 434, the "physics shop," I observed two 5-gallon containers under an unused parts washer, one labeled "T Oil" and one labeled "Turbine Oil." Both had funnels in the bung. Neither had a "used oil" label. The other containers in the pictures were empty.

	
0204 - The blue container with a funnel was marked “T Oil”	0205 - The white container with a funnel was marked “Turbine Oil”

Weniger Hall 414: Professor David Williams

The laboratory was actively being vacated, and students and staff were hauling equipment out as we were there.

In the South part of the lab, there was a fume hood with several chemicals in and adjacent to a cardboard box. The chemicals included picric acid, tetrahydrofuran, and anhydrous methyl ether. According to Joey Pryor, an undergrad student who was part of the moving-out evolution, the chemicals in and next to the box had been there since he arrived (approximately 1.5 years ago), and he had no idea how long they had been there prior to that.

0207 - Weniger 414S: Assorted chemical in and around the cardboard box in the hood

0208 - Weniger 414S: Tetrahydrofuran (U213) in the hood. According to submission B8 (Attachment D), the expiration date was 9/1/2004.

0209 - Weniger 414S: Box labeled as containing 2x120ml Picric Acid reagent in the hood, expired March 2007. Picric acid is an explosive.

0210 - Weniger 414S: Anhydrous ethyl ether (U117) in the hood, label stating “use before: November 30, 2012.”

Per submission B8 (Attachment D), these chemicals were associated with the work of Professor David Williams, and many of the materials, including the picric acid, tetrahydrofuran, and some perchloric acid, were sent off as hazardous waste.

Weniger 202 – Physics lab:

I observed a 2/3-full 5-gallon waste battery container on the floor, which was not closed and was not labeled as universal waste or with an accumulation start date.

0212 - Weniger 202: Open, unlabelled waste battery container

0213 - Weniger 202: Open, unlabelled waste battery container

Weniger 216 – Laboratory:

I observed a combination waste battery and bulb box on the floor, not closed, not labeled as universal waste or with an accumulation start date. There was also a bag of used HPLC vials; it was not known at the time of the inspection if they are shipped out as hazardous waste, nor was information in this regard requested as of the date of this report.

0214 - Weniger 216: Battery/bulb box

Weniger 106, Professor William Heatherington:

This room had a sink and fume hood in the back, but appeared to be functioning as a storage room, and it was extremely difficult to get back to the fume hood to see what was in it. I knocked on Professor Heatherington's door, but no one was in at the time of the inspection.

0223 - Weniger 106

0224 - Weniger 106: View from door towards the fume hood in the back corner, over the piles of stuff.

0216 - Weniger 106: Nitric acid and chlorobenzene in the fume hood.

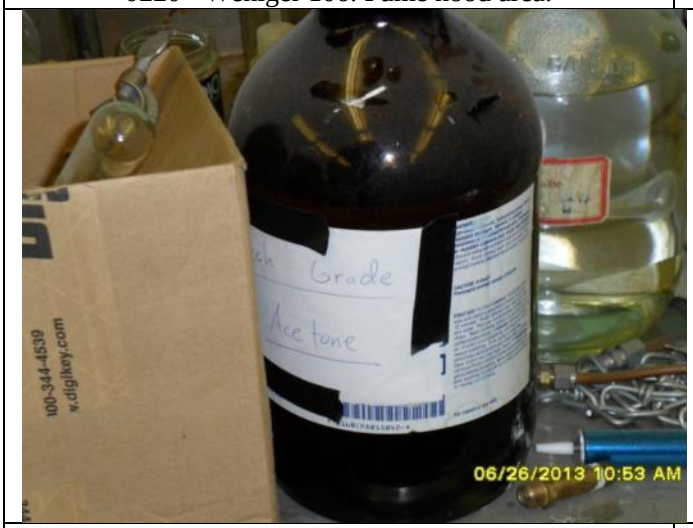
0217 - Weniger 106: Sulfuric acid in fume hood.

0218 - Weniger 106: Chlorobenzene in fume hood.

0219 - Weniger 106: Benzene and other chemicals in fume hood.

0220 - Weniger 106: Fume hood area.

0221 - Weniger 106: Sink area.

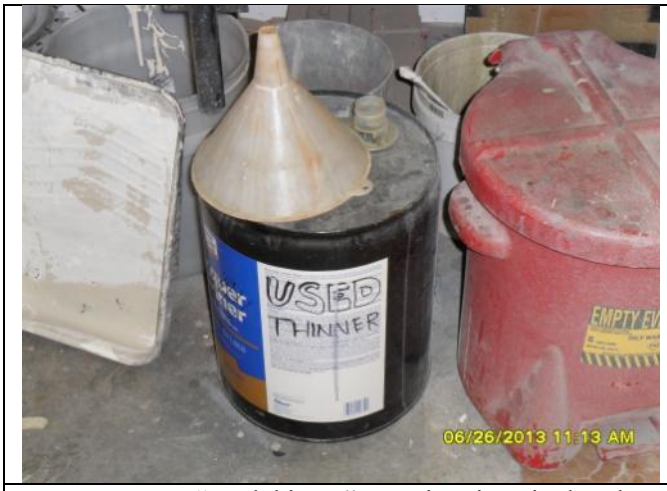


0222 - Weniger 106: Nearly full bottle of acetone near sink.

Per submission B9 (Attachment D), Weniger 106 contained chemical reagents, solvents materials that were used for a diverse set of activities: thin film preparation, preparation and modification of crystalline and amorphous surfaces, dye laser maintenance, and vacuum pump maintenance. These materials were used in a significant way until approximately **September 2008**, at which point activity in the room tapered off to a low level. This submission states that most of the material in this room was a waste, and much of that a hazardous waste.

Housing Maintenance Area – Gerry Frank, assets manager:

In this large building, various maintenance activities such as painting and light engine maintenance are performed. It also serves as a storage building for housing items.



0225 - Open "used thinner" container in paint booth room. It felt about 1/3 full.

0226 - Some of the open lamp containers outside of the paint booth that were not labeled as UW or marked with an accumulation start date.

0227 - Some of the open lamp containers outside of the paint booth that were not labeled as UW or marked with an accumulation start date.

0228 - Some of the open lamp containers outside of the paint booth that were not labeled as UW or marked with an accumulation start date.

In the general area of the building, just outside the access door to the paint booth, there were 7 open boxes of universal waste lamps/bulbs. In total, there were 13 boxes or other containers of universal waste lamps, none of which had UW labels or accumulation start dates on them.

	
0229 - Used oil drum behind the building, at least half full, not labeled with "used oil" but with "waste oil" per the yellow label.	0230 - Used oil container in the grounds maintenance shed, aka "grounds shop," that was not labeled as "used oil."

Records review
The inspection team reviewed the manifests, training records, contingency plan and other records required of generators who seek to operate under the "large quantity generator" permit exemption at 40 CFR 262.34(a).

Contingency plan:

1. Per Mr. Jones, the contingency plan (see Attachment B) only covers the EHS annex, while the hazardous waste management in other buildings is covered under building-specific or department-specific contingency plans. I later received the evacuation plans for Weniger and Gilbert Halls (Attachment C, Tab 3).
2. I noted that Attachment 1 to the contingency plan, which addresses arrangements with local authorities, was missing from the copy I was given, and Mr. Kermoyan stated he would forward a copy to me (see Attachment C, Tab 2).
3. There was no specific evacuation plan in the contingency plan per 40 CFR 265.52(f). Mr. Kermoyan gave me a generic evacuation notice for the campus (see Attachment B), which instructs the person to follow the evacuation plans for a specific department. Based on what I was presented, I did not see an evacuation plan for the Annex facility.

Training: I asked for the training records, the training syllabus, initial and recurring training documentation, and any other information pertinent to OSU's compliance with 40 CFR 265.16 [OAR 340-100-0002]. The response is contained in Attachment C, Tab 4. Based on a review of this information, the following apparent discrepancies were noted:

Name	Duties	Haz wastes managed	Training received
Justin Fleming	Manager of motor pool	Used oil, universal waste, antifreeze (potential HW)	None provided: should have received training on the 262.11 requirement
Dave Cross	Painter	Aerosols, paint thinner	Universal waste (1/2009): no HW training
Mark Wirth	Maintenance worker	Paint wastes	Universal waste (1/2009): no HW training
James White	Professor	Chemical wastes	General lab safety (11/2001): no HW training

Subrata Shaw	Graduate student	Chemical wastes	Lab waste intro (1/2008): no HW training
Jared Harzan	Undergraduate student	Chemical wastes	No information provided
Paul Blakemore	Professor	Chemical wastes	Yearly instructor of lab waste intro: he himself had no documented HW training
James Ingle	Professor	Chemical wastes	General lab safety (11/2001): no HW training
Baek Soo Lee	Graduate Student	Chemical wastes	Intro to lab waste (11/2012): no HW training
Joey Pryor	Graduate Student	Chemical wastes	No HW training
William Hetherington	Professor	Chemical wastes	No information provided: no HW training
Gerry Frank	Housing shop manager	Paint waste, used oil, universal wastes	Universal waste (1/2009): no HW training

Container inspections: as indicated by the documents in Attachment B, the following fifteen (15) weekly inspections were not performed at the 90-day accumulation Annex facility:

- 4/25 – 5/1/2010
- 6/27 – 7/3/2010
- 8/29 – 9/4/2010
- 12/26/2010 – 1/1/2011
- 3/27 – 4/2/2011
- 7/10 – 7/16/2011
- 9/25 – 10/1/2011
- 12/25 – 12/31/2011
- 3/18 – 3/24/2012
- 6/24 – 6/30/2012
- 8/26 – 9/1/2012
- 10/28 – 11/3/2012
- 2/24 – 3/2/2013
- 4/21 – 4/27/2013
- 4/28 – 5/4/2013

Waste characterization: As stated above, Veolia is entrusted by contract to characterize, package and ship all hazardous waste from the facility. I asked whether a hazardous waste characterization is performed for each and every container of waste, and Mr. Jones stated that such is the case. He stated that OSU does not maintain waste characterization documentation at their facility. I asked for the past 2 years worth of such information, detailing what information Veolia used to make hazardous waste and LDR determinations. 40 CFR 262.40(c) [OAR 340-100-0002] requires that such records be kept for at least three years after the waste was last shipped. I also asked for a copy of the contract with Veolia. The information is provided in Attachment C, Tab 1.

Closing Conference

The closing conference was held the afternoon of June 26th, and was attended by Patrick Hughes, Chief Risk Officer, as well as Mr. Kermoyan and Mr. Jones.

I stated that there were numerous instances observed of apparent violations of RCRA regulations regarding hazardous waste, used oil and universal waste. As Mr. Kermoyan and/or Mr. Jones accompanied the inspection team through the entire inspection, I did not enumerate each potential violation. However, I stated that I believed there was wide-spread failures to determine whether or not solid wastes were hazardous wastes, and that identified hazardous wastes, universal wastes and used oil were being managed in unclosed, undated, and/or unlabeled containers throughout the campus.

I stated that there were several containers which were apparently quite old, and many which apparently posed a serious threat due to their contents, such as the picric acid in Weniger 414 and the sodium-

potassium metals in the 90-day Annex. I stated that there were instances where I was unable to view containers due to the jumbled way the containers were oriented and the unknown hazards which those wastes potentially posed.

I expressed concern that it appeared to be standard practice that hazardous waste characterizations were not being done by the people who were generating the wastes and therefore had knowledge as to those wastes, and that wastes generated in laboratories were sent to the 90-day Annex without being characterized as hazardous waste.

I stated that there were several records which I requested be forwarded to me as part of the inspection, which Mr. Kermoyan agreed to do. A list is provided in Attachment C.

It was requested that follow-up correspondence regarding the inspection be sent to Mr. Kermoyan. However, I recommend that any formal correspondence be sent to the President of the University.

Follow-up Activities

Upon returning to Seattle, I sent a detailed email to Mr. Kermoyan (Attachment C) on June 28, 2013, which reiterated the records I requested, plus requested information on various wastes which were observed during the inspection. Mr. Kermoyan complied with the email request, and his responses are also Attachments C and D.

I also contacted the EPA Region 10 CERCLA program, and Richard Franklin, an On-Scene Coordinator with Region 10, who visited the campus the week following this RCRA inspection. Details of his site visit, and the extensive removal activities pursuant to his visit, are in Attachment E.

Subsequent to the inspection, per a phone conversation with Ali Nikukar, OSU contacted Oregon DEQ and requested assistance in setting up a program by which the university could operate in accordance with 40 CFR 262 Subpart K, Alternative Requirements for Hazardous Waste Determination and Accumulation of Unwanted Material for Laboratories Owned by Eligible Academic Entities. However, it must be noted that, at the time of this inspection, the prerequisites for eligibility under the Subpart K exemption were not in place at OSU.